UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,203	02/21/2002	Shih-Chin Chen	E20000420	9725

7590 04/07/2004

Michael M. Rickin, Esq.
ABB Inc.
Legal Department-4U6
29801 Euclid Avenue
Wickliffe, OH 44092-1898

EXAMINER	
RAPP, CHAD	

ART UNIT	PAPER NUMBER
2125	2

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	10/080,203	CHEN ET AL.	
	Examiner	Art Unit	
	Chad Rapp	2125	

-- The MAILING DATE of this communication appears n the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1,2 and 8-16* is/are rejected.

7)☒ Claim(s) *3-7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Claims 1-16 are presented for examination.

Allowable Subject Matter

2. Claims 3-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 1"the closed loop control" should be changed to "closed loop control". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-2, 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luontama et al. in view of Vahey et al.

Luontama et al. teaches the claimed invention (claim 1) substantially as claimed including a method for the closed loop control of fiber orientation of a web in a papermaking process comprising:

a. Performing on-line measurements of said fiber orientation is taught as on-line arrangement of measurement. Using on-line detectors for fiber orientation measurements(col. 4 lines 18-19 and col. 4 lines 34-36);

b. Transforming said on-line measurements to be a plurality of indices is taught as the measurements of machine direction and cross machine direction are put into arrays(indices)(col. 5line 26 to col. 6 line 36).

c. Comparing each of said plurality of indices arising from said transformed on-line measurements with an associated target and deriving therefrom a deviation for each of said plurality of indices from said associated target is taught as measurement signals are obtained from the measurement arrangement, the actuators of the head box are controlled by feedback so as to achieve a distribution of fiber orientation in accordance with a set value(abstract);

d. Computing actions for controlling said fiber orientation based on said derived deviations and a response characteristic of said process the actuators of the head box are controlled by feedback so as to achieve a distribution of fiber orientation in accordance with a set value(abstract);

e. Executing said control actions to minimize said derived deviations is taught as measurement signals are obtained from the measurement arrangement, the actuators of the head box are controlled by feedback so as to achieve a distribution of fiber orientation in accordance with a set value(abstract).

Luontama et al. teaches the above listed details of the independent claim 1, however, Luontama et al. does not teach: transforming said on-line measurements to be a plurality of indices.

Vahey et al. teaches :

a. Transforming said on-line measurements to be a plurality of indices is taught as the measurements of machine direction and cross machine direction are put into arrays(indices)(col. 5line 26 to col. 6 line 36).

It would have been obvious to one of ordinary skill in the at the time the invention was made or used to modify the teachings of Luontama et al. with the teachings of Vahey et al. because the Vahey et al. invention may be adapted for on-line use with a paper machine. The Vahey et al. invention is concerned with the fiber orientation error with respect to curl. Curl is important to control because excessive curl can jam copier machines.

As to claim 2, Vahey et al. teaches wherein said method further comprises the step of obtaining from said on-line measurements of said fiber orientation a plurality of vectors each of which represent an associated one of a plurality of fiber orientation profiles and said transforming step includes the step of transforming each of said plurality of vectors to an associated one of said plurality of indices is taught as multiple measurements of values of diffuse signals and specular signals were made. The diffuse and specular values were scaled (vector). The diffuse and specular data are stored in an array(profile or indices).

It would have been obvious to one of ordinary skill in the at the time the invention was made or used to modify the teachings of Luontama et al. with the teachings of Vahey et al. because the Vahey et al. invention may be adapted for on-line use with a paper machine. The

Vahey et al. invention is concerned with the fiber orientation error with respect to curl. Curl is important to control because excessive curl can jam copier machines.

As to claim 8, Luontama et al. teaches that wherein said computing step is responsive to said plurality of deviations of indices from said associated targets as inputs for computing one of said control actions as an output is taught as measurement signals are obtained from the measurement arrangement, the actuators of the head box are controlled by feedback so as to achieve a distribution of fiber orientation in accordance with a set value(abstract).

As to claim 16, Luontama et al. teaches that wherein said executing step comprises the step of applying said control actions to control a papermaking machine having one or more head boxes is taught as measurement signals are obtained from the measurement arrangement, the actuators of the head box are controlled by feedback so as to achieve a distribution of fiber orientation in accordance with a set value(abstract).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luontama et al. in view of Vahey et al. and further in view of Qin et al.

Luontama et al. and Vahey et al. teach the claimed invention(claim 1) see paragraph number 6 above.

As to claim 9, Qin et al. teaches wherein said computing step comprises the step of using logic selected from fuzzy or non-fuzzy logic or any combination thereof for computing one of said control actions is taught as a control signal is developed using a fuzzy logic technique(col. 10 line 65 to col. 11 line 18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Luontama et al. with the teachings of Qin et al. because the fuzzy logic computing step is most desirable with a closed loop system and it also is desirable when there is a complicated relationship in the fiber orientation.

As to claim 10, Qin et al. teaches wherein said fuzzy logic comprises at least two of said inputs and one of said output with a plurality of fuzzy rules and a plurality of membership functions associated to each linguistic descriptions is taught as two inputs e and delta e, output signal delta u, and using fuzzy membership functions to translate and transform the continuous error signal e and the continuous change in error signal delta e into linguistic fuzzy variables.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Luontama et al. with the teachings of Qin et al. because the Qin et al. reference deals with continuous real time control of the process parameter(fiber orientation) changes due to a set point. The real time control has a greater control and can change rapidly to a process error to protect future products such as paper sheets.

As to claim 11, Qin et al. teaches wherein said non-fuzzy logic comprises at least a mathematical operation of a weighted sum of a plurality of said inputs for computing one of said control actions is taught as using a signature analysis or process variables selected from a plurality of stores mathematical models. Selecting the closet model(col. 5 lines 48-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Luontama et al. with the teachings of Qin et al. because the Qin et al. reference using the fuzzy controller and the closed looped system has a quicker response to process errors.

As to claim 12, Qin et al. teaches wherein said computing step comprises the step of using a plurality of logic stages for computing one of said control actions is taught as a control signal is developed using a fuzzy logic technique(col. 10 line 65 to col. 11 line 18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Luontama et al. with the teachings of Qin et al. because the fuzzy logic computing step is most desirable with a closed loop system and it also is desirable when there is a complicated relationship in the fiber orientation.

As to claim 13, Qin et al. teaches wherein said step of using a plurality of logic stages comprises the step of implementing each of said plurality of logic stages as logic selected from fuzzy or non-fuzzy logic or any combination thereof is taught as a control signal is developed using a fuzzy logic technique(col. 10 line 65 to col. 11 line 18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Luontama et al. with the teachings of Qin et al. because the fuzzy logic computing step is most desirable with a closed loop system and it also is desirable when there is a complicated relationship in the fiber orientation.

As to claim 14, Qin et al. teaches wherein said plurality of logic stages comprises two fuzzy logic stages is taught as fuzzy logic using two membership functions(col. 10 line 65 to col. 11 line 18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Luontama et al. with the teachings of Qin et al. because the fuzzy logic computing step is most desirable with a closed loop system and it also is desirable when there is a complicated relationship in the fiber orientation.

As to claim 15, Qin et al. teaches wherein said plurality of logic stages comprises at least one stage that is fuzzy logic and at least one other stage that is non-fuzzy logic is taught as using a tuning function and a fuzzy logic function(col. 5 line 48-52 and col. 10 line 65 to col. 11 line 18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Luontama et al. with the teachings of Qin et al. because the fuzzy logic computing step is most desirable with a closed loop system and it also is desirable when there is a complicated relationship in the fiber orientation.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chad Rapp whose telephone number is (703)306-4528. The examiner can normally be reached on Mon-Fri 11:00-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on (703)308-0538. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chad Rapp
Examiner
Art Unit 2125

cjr

Albert W. Paladini 4-7-07

ALBERT W. PALADINI
PRIMARY EXAMINER